

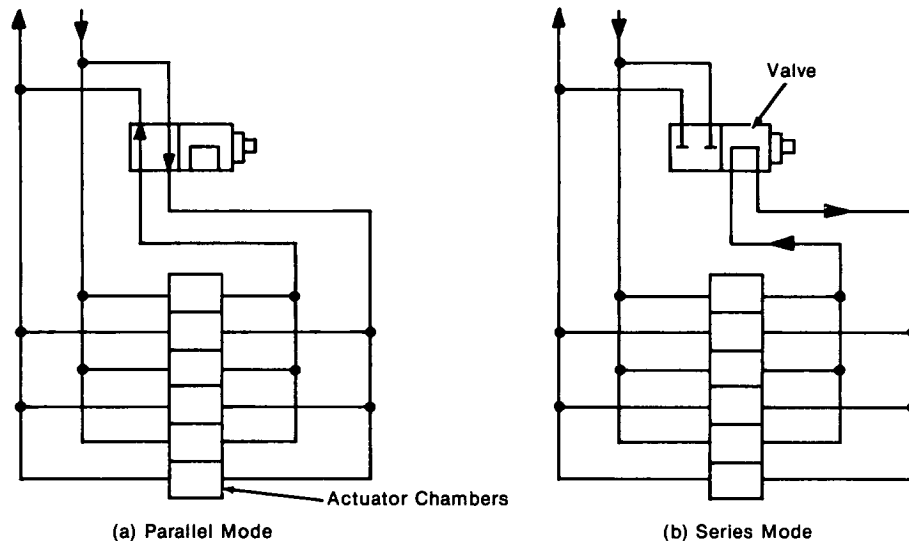
# NASA TECH BRIEF

## Langley Research Center



NASA Tech Briefs announce new technology derived from the U.S. space program. They are issued to encourage commercial application. Tech Briefs are available on a subscription basis from the National Technical Information Service, Springfield, Virginia 22151. Requests for individual copies or questions relating to the Tech Brief program may be directed to the Technology Utilization Office, NASA, Code KT, Washington, D.C. 20546.

### Reducing Flow Requirements of Fluid Actuators



Method To Reduce Flow Requirements of Fluid Actuators

A method for reducing the volumetric rate of the pressure medium (e.g., hydraulic fluid or air) to drive an actuator at high speed has been developed at Langley Research Center. The method can be used with any positive displacement actuator with multiple chambers.

As shown in the schematic, alternate chambers (or every third, fourth, etc.) may be connected by separate manifolds. A valve is arranged so that the manifolds are pressurized in parallel or in series.

- For low-speed high-torque operation, all chambers are exposed to the maximum available pressure in parallel.
- For high speed with proportionately lower torque situations, the valve is changed to put the manifolds in series.

This method of operation has the same effect as changing gears, as it permits two or more speeds for a given flow rate. The technique is being adapted at present for use with vane-type motors, such as the Bendix Corporation Dynavector®.

#### Note:

Requests for further information may be directed to:

Technology Utilization Officer  
Langley Research Center  
Mail Stop 139-A  
Hampton, Virginia 23665  
Reference: B75-10258

#### Patent status:

Inquiries concerning rights for the commercial use of this invention should be addressed to:

Patent Counsel  
Langley Research Center  
Mail Stop 313  
Hampton, Virginia 23665

Source: Moses J. Long and  
Stephen C. Irick  
(LAR-11540)

Categories: 06 (Mechanics)  
07 (Machinery)